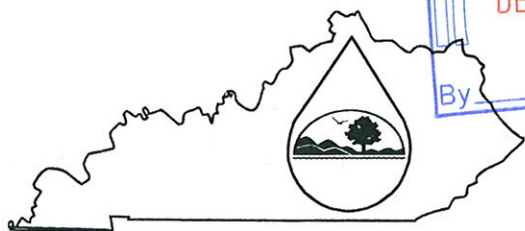


KPDES FORM HQAA



Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5 allows an applicant who does not accept the effluent limitations required by subparagraphs 2 and 3 of 5:030, Section 1(2)(b) to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name: Hopkins County Coal, LLC

KPDES NO.: 854-0252

Address: 2668 State Route 120 East

County: Hopkins

City, State, Zip Code: Providence, KY 42450

Receiving Water Name: Unnamed Tributary of Elk Creek

II. Alternatives Analysis - For each alternative below, discuss what options were considered and state why these options were not considered feasible.

1. **Discharge to other treatment facilities.** Indicate which treatment works have been considered and provide the reasons why discharge to these works is not feasible.

The nearest municipal sewage treatment facility is approximately six miles at Madisonville. This plant was not designed for or capable of effectively treating either the type (high solid) or volume of water involved with this project. Influx of water from this project would likely overload this facility resulting in a by pass which would lead to a discharge of untreated municipal wastes creating a serious public health threat and violations at this facility.

Routing of water to this plant would require approximately 35,000 ft of line, a network of pump and lift stations, and obtaining numerous right-of-ways and easements. Conservatively estimating line @ \$22/foot, two lift stations at \$75,000 each, ignoring other stated requirements, the minimum cost of this option would greatly exceed \$1,000,000 dollars.

Transporting this volume of water by self-contained disposal trucks would greatly increase the operational cost of this project. Based on a 25 year, 24 hour storm event, the possible peak discharge from this project could exceed 40,000 gpm. Rates quoted from Somerset Environmental in Somerset, KY indicated charges of \$65/hour (gate to gate)/3,000 gallon pick-up of non-hazardous wastewater and a \$0.49/gallon disposal fee.

2. Use of other discharge locations. Indicate what other discharge locations have been evaluated and the reasons why these locations are not feasible.

Earle Creek was considered as an alternate discharge location but it is in an adjacent watershed and because of the topography; would require pumping the water to discharge at this site.. To route water to Earle Creek would require approximately 15,000 feet of line, a series of lift stations, numerous easements and right-of-ways and a containment structure for collection. Lines would have to go under Highway 892 and the railroad creating a greater environmental disturbance than the proposed discharge location with the same end results of discharging into comparable quality water.

***Table 1
Pressure (LPS)**

<i>Pumping Stations (No. per mile by topography)</i>	<i>Flat</i>	<i>Rolling</i>	<i>Steep</i>
200 gpm P.S. \$54,000	0	0	2
100 gpm P.S. \$43,200	0	1	2
Composite Cost	\$0	\$43,200	\$194,400

Gravity			
<i>Pumping Stations (No. per mile by topography)</i>	<i>Flat</i>	<i>Rolling</i>	<i>Steep</i>
200 gpm P.S. \$54,000	1	0	2
100 gpm P.S. \$43,200	2	1	2
Composite Cost	\$140,400	\$43,200	\$194,400

A Mathematical Model For Estimating Sewer Costs"

by George A. Earle, III, P.E. and R. Paul Farrell Jr., P.E., Environment One Corporation

*Lift stations are site specific and vary greatly but are specific to topography and substrate composition

A conservative estimate of this option indicates cost would easily exceed \$1.5 million dollars.

Placement and design of current discharge location was engineered using modern techniques to be the most effective and the least invasive available option.

II. Alternatives Analysis - continued

3. **Water reuse or recycle.** Provide information about opportunities for water reuse or recycle at this facility. If water reuse or recycle is not a feasible alternative at this facility, please indicate the reasons why.

This area is a mine management area including access portals, office areas, parking and topsoil storage areas. Land application is not applicable. .

Potable water will be supplied by North Hopkins Water District.

The drainage area for this permit is 25.67 acres resulting in a possible discharge of over 40,000 gpm. In order to reuse or recycle this water, a central collection and distribution system would have to be constructed. The construction of said system would exceed \$1, 000,000. This would hinder the profitability of this project since the water cannot be used at this site.

4. **Alternative process or treatment options.** Indicate what process or treatment options have been evaluated and provide the reasons they were not considered feasible.

As an alternative treatment option, sand filtration was evaluated but deemed not applicable. Sand filtration is used primarily as a pre-treatment to remove microbial contaminants, not particulate matter, in storm run-off in smaller, urban drainage areas. The high solids involved in a storm event could possibly clog the filtration unit rendering it ineffective. Sand filters do not control storm water flow and do not prevent downstream bank and channel erosions as proposed sediment structures are designed to do. Also, the operational effectiveness of these units in colder climates and freezing conditions are not yet know.

Using silt fences and straw bales for sediment control was considered as per BMP's but would be inadequate due drainage area size.

Other mining methods were considered. Mining methods are dictated by elevation, thickness of the seam and the amount of overburden covering the reserves. Deep mining is the only feasible method to recover these coal seams.

Constructing an on-site storm water treatment facility was considered. The volume of discharge and the lift required make this an extremely costly option. The calculated peak flow from a 25 year, 24 hour rainfall event using the rational equation $Q=ciA$ where: Q =Peak discharge, c =runoff coefficient based on land use, i =rainfall intensity in inch/hour, and A =drainage area in acres, would exceed 40,000 gpm. Consultation with Beckman Environmental in Cincinnati, OH, a company that specializes in these types of constructions, revealed a recent bid on a project in Columbus, OH involving a lift of only 30 feet, a peak discharge of 3800 gpm, a grit removal tank, and influent and effluent lines at \$2.5 million dollars.

II. Alternatives Analysis - continued

5. On-site or subsurface disposal options. Discuss the potential for on-site or subsurface disposal. If these options are not feasible, then please indicate the reasons why.

Sanitary sewage from the office support area is going to be processed with the construction of a lagoon and leach field. The volume of water discharged from the sediment structure cannot be effectively treated in this manner.

The construction of an on-site wastewater treatment type plant would require a facility engineered to handle over 40,000 gpm during a 24 hour, 25 year storm event.* Construction cost for package plants are engineered to specific location, load and other conditions but with a required collection system would be expected to exceed \$1 million dollars. These plants require a continual power source, daily maintenance, periodic repair and leave a large footprint. After completion of this project, the plant would either have to be removed or abandoned to unsightly, dangerous rubbish.

**The Rational equation is the simplest method to determine peak discharge from drainage basin runoff. It is not as sophisticated as the SCS TR-55 method, but is the most common method used for sizing sewer systems.*

The installation of a sanitary septic system, i.e., septic tank was evaluated but is not an applicable option based on the ***volume and type of water resulting from this project***. A required calculated 24 hour, 25 year rainfall event could lead to a discharge of more than 581 million gallons per day. This would require the construction of a very large containment structure. Septic systems are design to degrade organic waste and biodegradable material over time by anaerobic digestion. While the source water would most likely contribute some organic material and some needed bacteria, this would be inadequate to decompose the sediment and this would work essentially the same as a sediment structure.

Underground works in the area were considered as a subsurface disposal option but were deemed as potentially dangerous due to the uncertainty of the condition of the remaining structures. The possibility exists that pumping water into these works could cause a "blow-out" or leakage leading to both a public safety and environmental threat.

6. Evaluation of any other alternatives to lowering water quality. Describe any other alternatives that were evaluated and provide the reasons why these alternatives were not feasible.

Choosing not to mine this area as an alternate to lowering water quality was evaluated but the loss of 330 jobs and the resulting \$24 million dollars in collective salaries, the loss of approximately 990 other indirect jobs resulting from this project as well as the loss of revenues including severance tax estimated at \$4 million dollars annually would have negative economic consequences.

Accepting the more stringent discharge limitations was considered but because this would require more aggressive chemical treatment, the real potential for an environmental or personnel accident exist. Based on information from OSMRE, the cost for chemical treatment of a mildly acidic mine drainage with an average flow of 100 gpm using caustic soda was \$94,784. With a possible flow of over 58 million gallons per day during a rainfall event, the cost of this option would jeopardize the economic effectiveness of this entire project.

III. Socioeconomic Demonstration

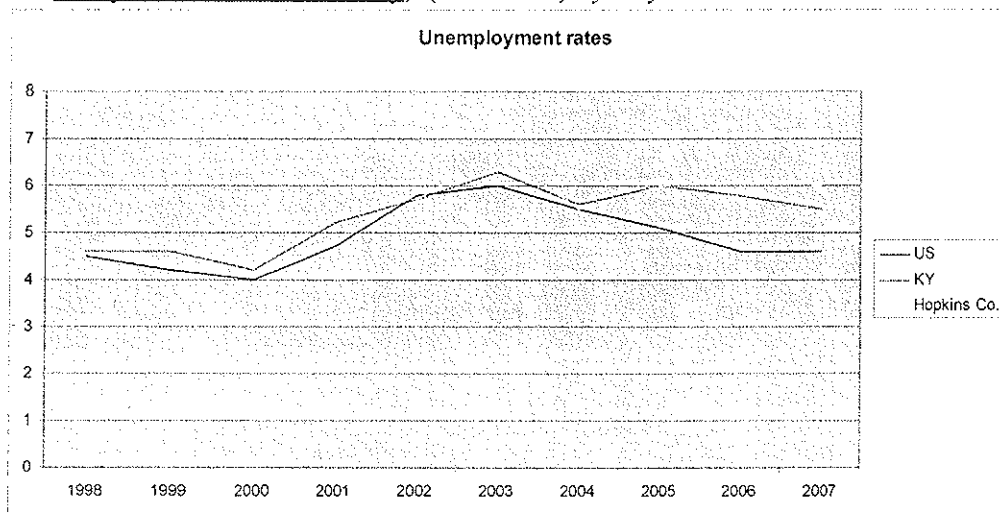
1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

This project will eliminate non-point source agricultural run off from this project area which has affected this watershed. Drainage from this area will be directed through the sediment structure preventing excessive siltation and fertilization of the stream reach. This will also eliminate the possibility of pesticides finding their way into the surface water. The discharge from this outlet will be monitored so that sub-standard discharge should not occur. Drainage control for this area will lead to a healthier habitat for aquatic species and other wildlife and an area that is ecologically functional and aesthetically pleasing. Reclamation plans call for development of a wildlife and fish habitat and commercial area.

2. Describe this facility's effect on the employment of the area

The small community of Providence in Hopkins County historically has an unemployment rates higher than the state and national averages. This project will continue the employment of 330 people of which 95% are local residents. Studies indicate that the mining industry creates 3 indirect related jobs for each actual direct mining position.* Based on these indicators, over 990 jobs will be supported by this project. The expected tenure of this project is 25 years. This project will provide long term employment for area residents.

*Source: University of Kentucky Center for Business and Economic Research: Economic Impact Analysis of Coal in Kentucky, (1995-2004) by Haywood and Baldwin



3. Describe how this facility will increase or avoid the decrease of area employment.

Unemployment data for October 2008*, indicated that there were 1,555 people in Hopkins County currently unemployed and seeking employment.

By maintaining these 330 existing jobs, this facility will avoid a decrease of the area's employment. This is significant for Providence due to the fact that the community is small and current economics limit employment possibilities.. As old mines become worked out, it becomes very important that new one be permitted in order to prevent the decrease in employment and income of the area. A decrease in mining activities in the area would produce the detrimental effect of more unemployed residents leading the area to economic distress. Although in a current upswing, the mining industry had experienced an almost 30% decrease in employment preceding 2005. These jobs help to decrease that trend.

*Workforce Kentucky

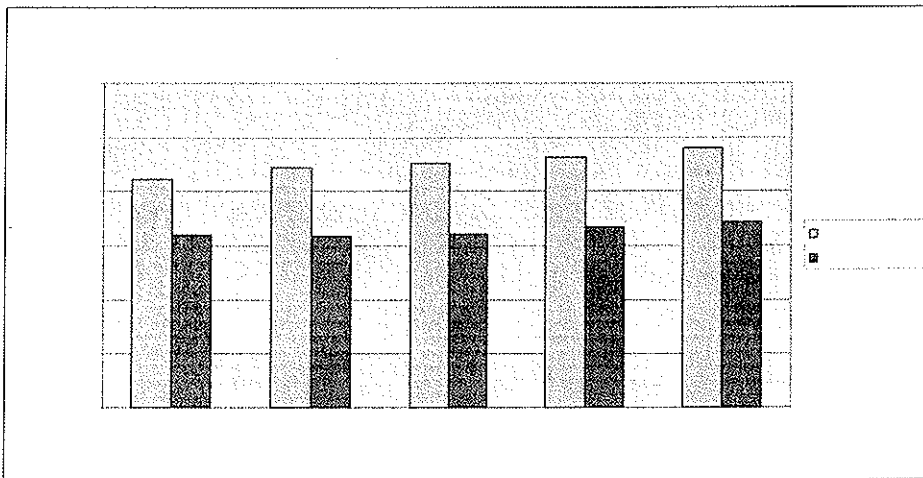
4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

In addition to 330 direct jobs provided by this project, it will also provide for more employment indirectly in mining service jobs. These jobs include equipment sales, mining engineering consultants, food service, fuel sales, transportation, coal washing and blending. The mining industry directly contributes to Hopkins County's economy through real taxes, personal property taxes and the state severance tax. The severance tax rate for coal is 4.5% of which 50% is slated to be returned to the counties of origin. For the fiscal year 2006-2007, Hopkins County's severance tax revenues were nearly \$17 million dollars*. Severance tax dollars are used for local education, health services, judicial services and infrastructure project and economic development. This project will contribute to this tax base and help provide more funding for county improvements

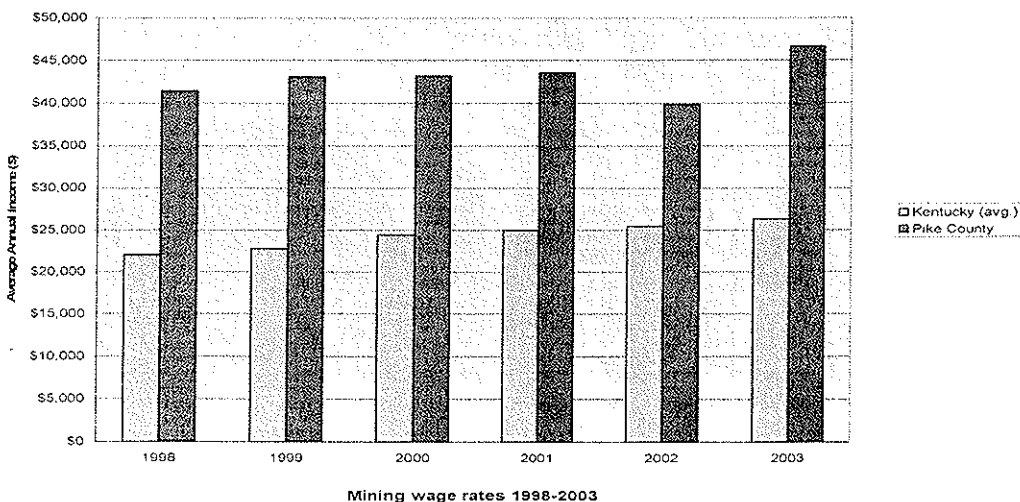
*Kentucky Revenue Cabinet.

5. Describe any other economic or social benefits to the community.

The jobs that this project provides pay some of the highest wages in Hopkins County. The maintenance of these jobs will have a positive significant impact on the community's economy. Comparing the median family income of Hopkins county residents with that of other Kentucky families, Hopkins county families earn on the average \$10,000 less per year:



However, Hopkins county coal miners earned almost double that of the average Kentucky worker as illustrated:

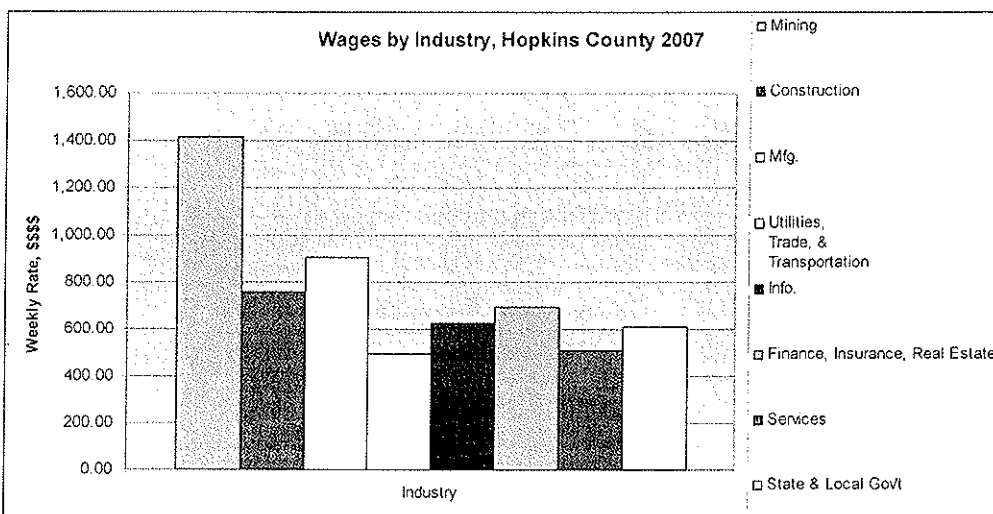


III. Socioeconomic Demonstration - continued

- | | <u>Yes</u> | <u>No</u> |
|--|-------------------------------------|-------------------------------------|
| 6. Will this project be likely to change median household income in the county? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. Will this project likely change the market value of taxable property in the county? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Will this project increase or decrease revenues in the county? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 9. Will any public buildings be affected by this system? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

10. How many households will be *economically* or *socially* impacted by this project? **1320**
11. How will those households be *economically* or *socially* impacted? (For example, through creation of jobs, educational opportunities, or other social or economic benefits.)

The average weekly earnings for a mining employee in Hopkins County in 2007 was \$1413.00*. These earnings accounted for 6.5% of the total county wages for that time period. The income realized from the direct jobs provided by this project will near \$73,000 year/household or approximately \$25 million/year collectively. Currently Kentucky ranks 44th nationally in per capital income. The jobs provided by this project allow these households to earn more than most other occupations in Hopkins county including construction, manufacturing, utilities and real estate:



Data for U.S. Census indicates that in 2005, nearly 18% of Hopkins county residents were living below the poverty level. These earnings will help these households to maintain or improve their current economic status and provide opportunities for gains in social welfare only realized from enhanced income. Severance tax dollars fund basic needs such as water and sewer projects but also fund recreational, social and cultural developments and economic development.

*Ky Coal Facts/Wages by County

- | | <u>Yes</u> | <u>No</u> |
|---|--------------------------|-------------------------------------|
| 12. Does this project replace any other methods of sewage treatment to existing facilities?
(If so describe how) | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
- Prior land use was agricultural. There was no treatment taking place in the proposed area.

- | | <u>Yes</u> | <u>No</u> |
|--|-------------------------------------|--------------------------|
| 13. Does this project treat any existing sources of pollution more effectively?
(If so describe how.) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
- Approximately 5 acres of this project area have been affected by previous mining. The remenants from this past mining project have been removed and the area has been reclaimed including grading and plantings..

III. Socioeconomic Demonstration - continued

Yes

No

14. Does this project eliminate any other sources of discharge or pollutants?
(If so describe how.)



This project will eliminate non-point source agricultural run off from this project area which has affected this watershed. Drainage from this area will be directed through the sediment structure preventing excessive siltation and fertilization of the stream reach. This will also eliminate the possibility of pesticides finding their way into the surface water. The discharge from this outlet will be monitored so that sub-standard discharge should not occur.

This project will involve reclaiming an old mine sites which is contributing to erosion and sedimentation in the area. Reclamation for the area, including approximately 5 acres of existing disturbances, will include initial seeding for ground control and later selected native planting to establish a functional fish and wildlife habitat.

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

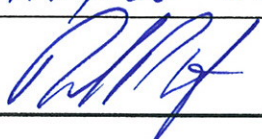
This project will remove approximately 3.5 million tons of coal annually that would not have been recovered or made available to the market otherwise. This will result in continued employment for approximately 330 people, aid in development and maintenance of indirect jobs and will increase the amount of money the area receives in personal and severance taxes. Hopkins county should see the return of near \$3,000,000 annually in severance tax dollars from this project alone.

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

Underground mining provides not only the most economical means to recover these coal reserves but also limits the overall aesthetic impact of this project. The post mine land use of fish and wildlife habitat will be developed using regulated, selective, non-invasive native species which will expedite the recovery of this area.

The increase in operational efficiency afforded by more modern mining technology will increase the production levels leading to increased employment opportunities in the area, maintenance of existing employment, development and maintenance of indirect jobs and increase in the amount of monies received from coal sales. In Hopkins county, severance tax dollars have been used for industrial site development, water and sewer line expansions, economic development and charitable organizations. These expenditures increase the overall quality of life of the area for area residents. This project will contribute over \$3 million dollars to these funds.

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Signature:		Date:	12/22/08